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measured this concentration by means of a convenient type of hydrometer, made the necessary corrections for temperature, and has been able to determine the limiting degrees of salinity which the dominant salt marsh plants of the New Jersey coast are able to withstand. Among the species able to grow in water containing over 1 per cent of sodium chloride, *Salicornia herbacea*, *Distichlis spicata*, and *Limonium carolinanum* seem to have the smallest range of accommodation; while *Spartina stricta maritima*, *S. patens*, and *Juncus Gerardi* show the widest limits. *Typha angustifolia* cannot grow in water that approximates a sodium chloride content of 1 per cent, and in much less dilute solutions shows the detrimental effect of the salt. From a large number of determinations, the height of the plants and the size of their spikes are shown to vary inversely with the concentration of the water in which they developed, the optimum condition being entirely fresh water. The paper contains other valuable data and points the way for intensive studies of the vegetation of salt marshes and alkaline soils.

A few notes on the deposits shown in sections of the salt marsh soil indicate a definite succession in the former vegetation similar to that at present in progress, and that there has been a progressive submergence of the marsh either from a change of tidal level, as held by JOHNSON,[17] or from a general subsidence of the entire coast line, as is believed by most investigators.—GEO. D. FULLER.

Queensland ferns.—Dr. F. M. BAILEY, the veteran colonial botanist of Queensland, Australia, has just published an interesting review[18] of DOMIN's work on Queensland plants, so far as it concerns ferns and fern allies.[19] The new species and varieties, as well as species new to Queensland, are listed, often with descriptions. The notable feature of the review is the almost constant criticism of DOMIN's new species and varieties. For example, in regard to *Psilotum triquetrum* Sw. var. *fallacinum* Domin, he says that "the distinctions given seem only those of growth and situation"; *Selaginella flabellata* F. v. M. var. *brevispica* Domin "is scarcely worthy of a distinctive name"; *Marattia oreades* Domin "can hardly be separated from that very variable species *M. fraxinea* Sm."; in regard to two new varieties of *Platycerium alcicorne* and one new variety of *P. grande* he says that "it is scarcely advisable to attach names to isolated plants of *Platycerium*, particularly as differences in their growth and form are so often caused by situation." "Finally," says BAILEY, "I think that had Dr. DOMIN had a longer experience with our ferns, and observed the great diversity of their form and growth, he would have realized that some of his new kinds were but growths of well known species."

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[17] JOHNSON, D. W., The supposed recent subsidence of the Massachusetts and New Jersey coasts. Science N.S. **32**:721–723. 1910; also Botanical evidence of coastal subsidence. Science N.S. **33**:300–302. 1911; also BOT. GAZ. **56**:449–468. 1913.

[18] BAILEY, F. M., Contributions to Queensland flora. Bot. Bull. no. 17. pp. 14. 1913.

[19] DOMIN, K., Beiträge zur Flora und Pflanzengeographie Australiens I. Abt. Pteridophyta (Prodromus einer Farnflora Queenslands). Stuttgart. 1913.

Nearly 70 years of experience with plants in the field, much of it with Queensland plants, add to the weight of BAILEY'S comments. At the time of DOMIN'S visit, the present reviewer was collecting morphological material in Queensland, and can heartily agree with the remarks regarding the variability of *Psilotum*, *Marattia*, and *Platycerium*. In *Platycerium*, particularly, the appearance of the plant is so affected by its position on the tree, that isolated plants might be described as new species, if the differences were not so obviously due, in some cases, to merely mechanical causes.—C. J. CHAMBERLAIN.

A new seed genus.—Miss BENSON[20] has made *Conostoma ovale* Williamson the basis of a new form genus, which she calls *Sphaerostoma*. Along with *C. ovale* the doubtful species *C. intermedium* is included as *S. ovale*. In general structure the seed resembles *Lagenostoma*, and is found most frequently without its cupule (or outer integument), from which it doubtless separated when dropped. All of the epidermal cells of the integument are papillate, and at the apex, where the integument is free from the nucellus, they become so elongated as to form a whorl of epidermal crests, the "canopy" being 8-lobed. These crests Miss BENSON calls "frills."

The structure of the lagenostome, however, is quite peculiar. There is the usual central column of nucellar tissue, surrounded by the moatlike pollen chamber which is invested by the epidermis of the nucellus. But the roof of the pollen chamber is modified into what Miss BENSON regards as "an elastically acting mechanism" which definitely closes the pollen chamber after there has been a dehiscence which admits the pollen grains. This elastic mechanism, forming the roof of the pollen chamber, is the epidermis so modified as to resemble in appearance a multiseriate annulus. The conclusion is that in dehiscence this mechanism straightens elastically, admits pollen grains, and then closes the chamber again.

The seeds are provisionally referred to *Heterangium Grievii* on what seems to be excellent evidence, namely constant association, suggestions of actual continuity of ovules with the parent plant, and the evident morphological relationship to *Lagenostoma*.—J. M. C.

Culture of Opuntia.—GRIFFITHS[21] records some very interesting observations upon the behavior of certain species of *Opuntia* under culture. The plants were grown at the government stations at Brownsville and San Antonio,

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[20] BENSON, MARGARET J., *Sphaerostoma ovale* (*Conostoma ovale* et *intermedium* Williamson), a Lower Carboniferous ovule from Pettycur, Fifeshire, Scotland. Trans. Roy. Soc. Edinburgh **50**:1–15. *figs. 3. pls. 1, 2.* 1914.

[21] GRIFFITHS, D., Behavior, under cultural conditions, of species of Cacti known as *Opuntia*. U.S. Dept. Agr., Bur. Pl. Ind., Bull. no. 31. pp. 24. *pls. 1–8. fig. 1.* 1913.